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2015-02-12

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International Conference on Strategic Innovative Marketing, IC-SIM 2014, September 1-4, 2014,  
Madrid, Spain

## A Proposed Model for the Approach to Augmented Reality Deployment in Marketing Communications

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### Abstract

In the contemporary landscape, human interaction is characterized by the pervasive mediation of intelligent agents. Owing to advances in computer science and engineering, phenomena once limited to fixed locations are metamorphosing from extraneous entities to implicit components of the everyday. Computing power has simultaneously enhanced and miniaturized to the extent that contemporary consumer devices demonstrate power equivalent to or greater than that of personal computers of recent memory. At the same time, network connectivity has proliferated to ubiquitous levels, reflected in the fact that the amount of inanimate objects connected to the Internet has recently surpassed the human population of earth. Digitally mediated experiences are thus no longer the province of fixed-line terminals; rather than projecting a virtual avatar of oneself into a synthetic environment, elements of that environment are extricated and placed into the physical domain. In this landscape, the concept of augmented reality (AR) has emerged as a way to visualize the pervasive virtual information woven into the physical environment. However, research on the phenomenon has largely remained technical in nature; the collective body of work which seeks to understand its role in society has remained comparatively limited. This paper aims to bridge the divide between these hitherto disparate research avenues. The paper affords particular attention to the impact of AR on the discipline of marketing communications, as the domain's interest towards phenomenon accelerates; following the motifs of historically innovative phenomena such as television and the Internet. Through a qualitative approach, the paper derives insight from key social actors, resulting in a number of findings used as a foundation to build knowledge on the nascent role of AR in the marketing communications domain. A model is presented which schematizes an approach to the deployment of AR, formalizing the collective intelligence of those key social actors. The aim of the paper is thus to propose heuristics for marketing professionals who seek to implement AR as a component of a communications programme, and increase the collective knowledge of the discipline on this enigmatic phenomenon. The proposed model is dual-natured, highlighting not only the unique attributes of AR, but emphasizing the robustness of traditional best practice values to which its implementation must adhere. The latter represents a recurring theme throughout the research findings; a potentially significant one given the singular nature of the phenomenon and the tendency towards the novel observed in many of its early applications.

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Peer-review under responsibility of I-DAS- Institute for the Dissemination of Arts and Science.

**Keywords:** Augmented reality, virtual reality, digital mediation, ubiquitous computing, digital marketing

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## 1. Introduction

The ubiquity of digital media is axiomatic of the contemporary environment, wherein digitally mediated interactions have become the essence of its landscape. The consumption of digital information was once the province of entirely virtual environments, within which users held a likewise virtual presence. Increasingly, virtual content is extracted from synthetic worlds and assimilated into the corporeal; the mediating technologies through which individuals interact with it are becoming appendages of the physical self, signalling profound changes to innumerable application areas. This paper explores a contemporary phenomenon engendered by this landscape of pervasive mediation referred to as augmented reality (AR). Specifically, the paper positions itself within the broad realm of marketing communications, examining AR in the context of the discipline. The challenge of establishing concepts of best practice in the discipline of communications is apparent, as developments in the media landscape in which it operates ceaselessly perpetuate. As the standards of human communication and consumption continue to be redefined, so too must the corresponding enterprise of practitioners. To this end, the author proposes a model approach to the deployment of AR for marketing practitioners. It is argued that adherence to the tenets of the model will result in the dissemination of resonant AR output, highlighting the limitations of the medium when considered independent of best practice principles.

## 2. Background to the research

### 2.1. *Genesis of augmented reality*

Augmented reality (AR) systems integrate virtual information into a user's physical environment so that the information is perceived as existing in the environment (Höllerer et al., 2001). Consistent with the work of Milgram et al. (1994), it may be helpful to conceptualize reality as a straight line; a continuum from fully real to fully virtual. One end represents an individual's presence in a physical environment, shared with other objects of the atomic world (Yoh, 2001). On the other end, virtual reality (VR) describes one's immersion in a fully synthetic environment. AR occupies the space between the real and the virtual ends of the continuum. As distinct from virtual reality, AR applications generate virtual information to overlay tangible objects in real time (Zhou et al., 2008). To illustrate, a heads-up display (HUD) system used by pilots in military aviation utilizes AR technology to display critical flight data. In this context, the virtual information integrated into the pilot's field of vision might include coordinates and other navigational data. Indeed, this manner of industrial application is synonymous with traditional AR systems, owing to the cumbersome nature of the technology of which they were typically comprised.

The technical components fundamental to AR no longer limit its applications to industrial fields; many have become native to contemporary consumer devices such as the smartphone. The most conspicuous illustration is that of the device's camera, which acts as a portable window allowing users to access the virtual information increasingly embedded into the physical world through a software interface. At a more latent level, inertial sensors such as the digital compass, accelerometer and gyroscope allow the device to determine the user's orientation relative to the earth, important for the accurate positioning of virtual annotations; while advanced processing power allows the device to render increasingly sophisticated graphic overlays (Bernardos and Casar, 2011). Where AR systems were once limited to predominantly ad hoc contexts in which the environmental variables were controlled (Kangas and Röning, 2002), native location sensors such as the Global Positioning System (GPS) combined with a high bandwidth communication capacity have enabled the growth of mobile AR applications (Takacs et al., 2011).

### 2.2 *Marketing interest in AR*

In recent years, advancements in consumer domain technology have transformed traditional conceptions of mobile marketing, signalled by the emergence of the smartphone, allowing practitioners to conceptualise entirely new ways of harnessing the core attributes of the mobile medium such as device ubiquity and capacity for interaction. Moreover, convergence of the wired and wireless Internet has become profoundly more pronounced; individuals are increasingly transposing consumption habits once the exclusive province of fixed-line Internet access to the mobile medium, driving it to further levels of centrality to the lives of the consumer. This has served to intensify the collective interest of the marketing domain in the medium. The attributes of the traditional 'feature' phone upon which mobile marketing grew to prominence, combined with the technological advancement of the contemporary smartphone, have allowed for unprecedented levels of richness in mobile communications (Persaud and Azhar, 2012) engendering a diverse array of digitally mediated phenomena, among which AR is positioned. However, the role of AR in a marketing communications context lacks empiricism; a dearth of research exists which formally investigates the phenomenon as an emergent branch of the discipline. Academic inquiry of a predominantly technical nature has hitherto dominated the research agenda of AR. As a result, demonstrating an increasing presence within the sphere of the mass market, AR remains a largely extraneous phenomenon to academic fields outside of those concerned primarily by its technical development (Liao and Humphreys, 2014). The paper thus aims to bridge the chasm between the technical and the social science contexts of AR.

### 3. Methodology

It was determined that a dual-natured approach to the research was required in order to obtain the level of insight sought on the phenomenon. One branch of the research derives insight from industry practitioners of AR, those responsible for the composition of AR applications whose proliferation is the subject of the inquiry. The other elicits the perspectives of the consumer, to whom those applications are directed and impact upon. This approach would necessitate disparate courses of action in order to cultivate these diverse perspectives effectively.

The in-depth interview was identified as the most appropriate means to obtain the data from the industry practitioner. A total of 13 in-depth interviews were carried out, comprised of both developers of the technical platforms upon which AR messages are built and the marketing agencies who condition their dissemination in a creative or production capacity. In order to elicit consumer insight, it was determined that an alternative approach would be required. The avenue chosen was that of the focus group, with a total of nine focus group sessions carried out comprised of 49 research participants. Of those nine groups, two were comprised of non-owners of smartphones in order to diversify the perspectives elicited. Participants within each focus group were exposed to AR stimuli prior to the discussion in order to facilitate hands-on experiences with the subject matter under research.

### 4. Findings

#### 4.1 *AR as an appropriate marketing communications medium*

The extent to which AR possesses attributes suited to the dissemination of marketing communications stimuli was a pervasive discussion point throughout the research findings. Practitioners sought to ground the phenomenon amidst the manner of industry furore characteristic of media innovations. While acknowledging the singular properties of AR, the medium was disassociated from the hyperbole which has surrounded it in order to provide an objective outlook on its capabilities. Despite those unique properties, AR is placed on the same plane as other media platforms in respect of its suitability to marketing communications. That is, while having certain proprietorial advantages over its counterparts, AR is subject to the same conditions which determine the extent to which any given media option is effective. Primary among those conditions are the objectives of a media campaigns; as with any medium, the attributes possessed by AR lend it the capacity to pursue different objectives with variable success. Thus, prospective brand adopters of the medium should first consider those objectives and the extent to which AR is appropriate, rather than regarding the use of AR itself an objective with ill-defined outcomes the result.

To the practitioner perspective, the landscape of AR-based communications is littered with endeavours which run contrary to this tenet. The perceived misappropriation of the medium stems from its adoption based on hype; in its relatively short existence, AR has cultivated a strong predisposition towards its use by brand adopters, without the

requisite understanding for its successful deployment. In this landscape, AR has predominantly been an object of attention through which accolades are cultivated by its brand user, regarded as a spurious goal by practitioners. While some interview respondents acknowledge a degree of value historically derived from this superficial exercise, the unanimous perception held is the degradation of any such value in the contemporary use of AR.

The practitioner perspective regarding the superficial use of AR was matched in sentiment by the consumer. Despite the ostensibly innovative properties of AR, focus group participants were critical of AR stimuli perceived as not fulfilling any meaningful function, rather deployed for the sake of utilising new technology. Some individuals posited the development of a 'mental filter' developed by consumers towards advertising appeals, likely to evolve in order to subvert even the most singular of communications. Thus, today's unique and 'cut-through' marketing message tomorrow becomes submerged in the cacophony against which it is purported to stand out.

The result of such misappropriations of AR is a perception of its arbitrary use, regarded as somewhat cynical attempts to wield influence based novelty; the expression 'using AR for the sake of using it' and sentiments to that effect were recurrent in both branches of the research. Used appropriately, the virtues of AR as a marketing communications medium were extolled by both practitioners and consumers alike. The following section examines some of the key conditions in which AR is held as an effective marketing communications platform.

#### 4.2 The effective deployment of AR

This paper synthesises the perspectives of practitioners and consumers in order to schematize a formal approach to the deployment of AR in a manner hypothesised as effective. It was found that an approach to the deployment of AR should be twofold in nature. On one dimension, practitioners should adhere to the established heuristics of marketing communications practice; despite its singular nature, it is proposed that AR is beholden to a common set of deployment principles which transcends form. On another dimension, the unique attributes of the medium should be effectively utilised emphasised in order to adhere to those principles with unprecedented effectiveness.

##### 4.2.1 Adherence to established marketing communications practice

Undoubtedly, AR possesses many unique qualities; however, under the practitioner perspective towards the phenomenon, the importance of maintaining the established heuristics of marketing communications practice was emphasised recurrently. The perceived misappropriation of AR stemmed predominantly from instances where marketing practitioners lost sight of those values axiomatic to the domain, or regarded the importance of their adherence as secondary. The fallacy of this approach lay in the tenet that the unique properties of the AR offer practitioners the capacity to create effective communications stimuli; considered in isolation, independent of those traditional values, they are ultimately limited in value.

Under the practitioner perspective of the research, a number of specific considerations arose concerning the adherence of AR deployment to established communications principles. The first among those considerations is the *objective or set of objectives* tied to the AR output. This was explored earlier in the paper in discussing the potential misappropriation of AR in marketing communications practice; the crux of the issue was the alignment of the medium, or the lack thereof, to tangible, predefined objectives of a given campaign. The principal message emerging from the practitioner perspective is the importance of prioritising the composition of meaningful objectives above any arbitrary predisposition towards its use. The process of utilisation should thus begin with a mapping of a campaign's objectives in order to determine the congruence of AR to their pursuit; a process which may result in opting against the medium in deference to the capacity of existing media channels to achieve them.

*Target market alignment* is a further deployment consideration found. The importance of target market alignment was erected under the practitioner perspective of the research with evidence supporting the hypothesis emerging from the consumer. Focus group participants expressed positive or negative regard respectively for applications which either spoke to, or were incongruent with, their lifestyles. Specifically, one's current life stage appeared to set parameters around the prospective adoption of AR; a number of users, for example, expressed a disinclination to use any application the output of which was deemed extraneous to their essential needs, regardless of its technical merits owing to factors such as time constraints.

The principle of target market alignment leads the discussion to another crucial tenet of marketing communications: the *derivation of value* on the part of the consumer. Focus group participants held a consistent

attitude towards their prospective adoption of AR applications: that it is conditional on the provision of 'meaningful' value to the user. This perspective enforces the notion that the attributes of AR represent an enhanced capacity to deliver value, but those attributes alone are not means towards that end. This serves as a reminder that the medium is no less beholden to consumers for the provision of meaningful output than any other simply because of its differential qualities. This became abundantly clear throughout the focus group sessions; the majority of participants were steadfastly pragmatic concerning the manner in which they envisioned using AR. Applications which tended more towards perceived novelty were questioned with respect to their value. Crucially, in the context of the discipline, marketing-based applications of AR elicited the question in greater frequency than those without an overt commercial genesis such as educational applications, or those centred on some form of utility.

The final consideration tied to established marketing practice convention concerns the *integration of AR* into a wider marketing communications mix. Practitioners emphasised the need to conceptualise AR within a spectrum of available media platforms, calling for a de-emphasis of AR as a singular phenomenon on a plane unto its own. They propose that ultimately successful campaigns are those which utilise a broad range of the spectrum, integrating those platforms together in order to derive synergistic benefits from them. The same brand value articulated through static forms of communication, for example, could be supported through the more dynamic capacity of AR. Several focus group participants highlighted how AR enhanced their capacity to decode a message and thus assimilate its contents. Conversely, rather than reinforcing common associations through diverse media channels, those channels may be directed at heterogeneous objectives. An overarching business objective may be comprised of several elements, to which diverse media are differentially suited. One interview respondent cast a critical eye upon using AR to overlay video content on a physical cue, one of the most abundant uses of marketing-based AR, sharing the belief that other forms of digital media are better suited to the function. In order to execute the provision of video content through an AR interface, the content must be compressed to the extent that the quality is severely compromised.

In contrast, AR mechanisms may be more suited than traditional means for alternative objectives. For example, there was evidence in the research that AR enhances the effectiveness of commerce applications by portraying the various dimensions of a product through three-dimensional image rendering. This was articulated by a number of focus group participants in response to an application in which users can interact with a 3D rendering of a shoe, in addition to customising the product by changing its colour.

The principles of directing the medium towards predefined objectives, aligning its output to the preferences of the appropriate target market, the provision of valuable output, and its integration with alternative forms of media communication thus comprise the major ways in which AR deployment should adhere to traditional values of the marketing communications discipline, as identified under the practitioner perspective of the research. The following section examines how the uniqueness of AR attributes prompt particular considerations alongside those conventions.

#### *4.2.2 Utilising the unique attributes of AR*

The *informational value* of the content output is the first major dimension of a communications stimulus which determines the extent of its value. In the context of AR, an important dimension concerns the information density of the medium, an outcome of which is a greater capacity of the medium to deliver more in-depth information. Using an AR triggering mechanism, a static image is given transformative properties. A two-dimensional portrayal of an object becomes three-dimensional; image-based stimuli become animated and so on, mechanisms which potentially increase the volume of information derived by the recipient. Consumer perceptions towards this attribute varied according to the manner of its utilisation; some users were unconvinced of the need for a greater depth of information, positing that it could precipitate an abundance of information of a superfluous nature. Others conceived of ways in which it could enhance one's consumption habits; the greater the depth of information, the more informed one is in decision-making situations. This stance is reinforced when the dynamic properties of the information are considered, as touched on above. As one user articulates, AR applications have the potential to offer a 'new quality of information'. Practitioners should consider the information that they wish to convey, and how that information might be transposed to the medium. A number of users responded positively to an AR-embedded billboard which turned a static image of a model into an animated catwalk, allowing for a greater volume of items to be showcased in a condensed time period, and offering greater context by showing how they look on a real person.

A further attribute of AR articulated in positive terms by the consumer is *utility or convenience*. Throughout the focus groups, participants articulated the various means by which AR represented the potential to enhance one's life



through its utilitarian properties. The challenge for marketing practitioners is thus the conceptualisation of communications which wield these characteristics. In the focus groups, one application which allows users to transform their smartphone interface into that of another device was highlighted in the context of functionalities offered which are not replicable by other media. One user commented on the difficulties and costs associated with the purchase of a new device, and the extent to which the application supported the task.

This functionality is tied to a further aspect of utility perceived in AR applications which can be exploited in the conceit of enhanced marketing communications: streamlining the process of information gathering by consolidating the effort demanded of the user. In the illustration above, the prospective user might benefit from not having to gather the information manually (for example, by synthesising product reviews of the new device); an attribute of AR commented upon by a number of users in the focus groups. This highlights an amalgamation of AR attributes which should potentially comprise the foundation of its deployment: the informational or content value of the communication and the convenience of its accessibility for the recipient.

In addition to the related concepts of informational and utilitarian value, a further imperative for marketing practitioners in the context of AR-based communications concerns the *communication of its output*. Despite the acceleration of AR as a consumer marketing phenomenon, it is one which currently remains peripheral in a wider societal context. By its nature, AR is not a conspicuous medium; rather, it is one characterised by symbiosis with other media platforms in which its features are embedded. A crucial determinant of its effective deployment is thus the extent to which the AR features of a stimulus are communicated. A recurring stance in the research findings was the perceived difficulty of discovering AR content as a barrier to its adoption; a sentiment expressed by both practitioner and consumer participants in the research. In particular, the issue of identifying AR content was a recurring feature of the focus group discussions. Participants were critical of the subtle nature of much of the AR content exposed to them, highlighting the need for greater explicitness until mass market awareness in the phenomenon develops to the point where the associated behaviours are more embedded, thus communications can afford to be more implicit.

The importance of communication and explicit instruction are closely related to a further practice imperative found in the research: *simplicity in engagement*. The same reasons why mass market consumers may not know of the existence of an AR interaction – that is, its peripheral status – suggest that those individuals are unlikely to intuitively understand their own role in the interaction. Therefore, the same exposition which communicates the existence of AR attributes in a stimulus should be sufficiently explicit in guiding the prospective user through the experience. There are elements of ‘friction’ in an AR experience which are currently inherent to the medium and are thus difficult to simplify; the need to download an extraneous application, for example, or the need to hold the device appropriately. If the eradication of these frictional elements is a function of time rather than any feasible proaction on the part of industry stakeholders, then such guidance may at least alleviate perceptions of complexity.

Instructions should further span the entirety of the experience; from the pre-launch imperatives (such as downloading the application) to those of the interaction itself (such as the manner in which the device should be held). The absence of these important cues is likely to engender feelings of frustration on the part of the user, which potentially reflects on the brand source of the experience. Aside from the presence of instructions to clarify the nature of the interaction, the interaction itself should be sufficiently straightforward for the user. In the research, those perceived as complicated were received negatively by users, resulting in abrupt cessation of the interaction.

*Interactivity* comprises the penultimate practice imperative. Interactivity may seem axiomatic to AR by the very nature of the medium, which requires an active role on the part of the user. However, this active role should not be assumed synonymous with interactivity. An application might require the prospective user to trigger the virtual content embedded in a communication piece, which constitutes a more active role than that associated with most traditional media; however, the nature of the interaction thereafter may still be more static than interactive. While spatial visualisation is a fundamental attribute of AR, the capacity for users to interact with what is visualised was found to be an important component of a stimulus, opposed to its passive observation. Rotating a three-dimensional product, for example, or changing dimensions of the model such as its colour are illustrations of such design principles; alternatively, ‘gamification’ potentially increases interactivity levels through the addition of game mechanics which further engage the user. Predominantly, focus group users sought logical progression in an AR experience; a sense that it was ‘going somewhere’. What was implied is that an interaction should bear sufficient features or options that allow users to perpetuate the interaction, thus engaging their attention further and providing incentive to not abruptly discontinue the experience.

The final practice imperative emerging from the research is the need for content to be framed by *appropriate*

*context.* Owing to the active role of recipients of AR communications, the medium typically demands more of a user's time relative to other media channels. The challenge is that the contemporary lifestyle of the consumer is not typically conducive to AR experiences. Therefore, the most effective instances of deployment are potentially those which target the discretionary time of prospective users. This perhaps accounts for why many of the most talked about illustrations of AR in the communications domain are based on proximity to public transport, as it epitomises this scenario, made reference to by several focus group participants.

A further dimension of the context issue is the potentially effective role played by AR in situational decision-making scenarios. Faced with a plethora of static posters for feature films outside a theatre, for example, the consumer may be influenced greater by the one poster which transforms itself into a trailer or some other form of interaction. Because AR is capable of consolidating the steps involved in fetching various dimensions of information on a product or service, it may engender more impulsive decisions in contexts such as this. Marketing practitioners may thus benefit from mapping the typical aspects of one's life in which consumption-based decisions are made, and conceptualising unique ways in which AR can influence those decisions.

The final section of the paper draws the disparate findings together and delineates the key areas into a model which proposes an optimised approach to marketing communications applications of AR.

## 5. Conclusion

The model proposed by the author is depicted in Figure 1, representing the cumulative output of both practitioner and consumer discourse derived from the research findings:

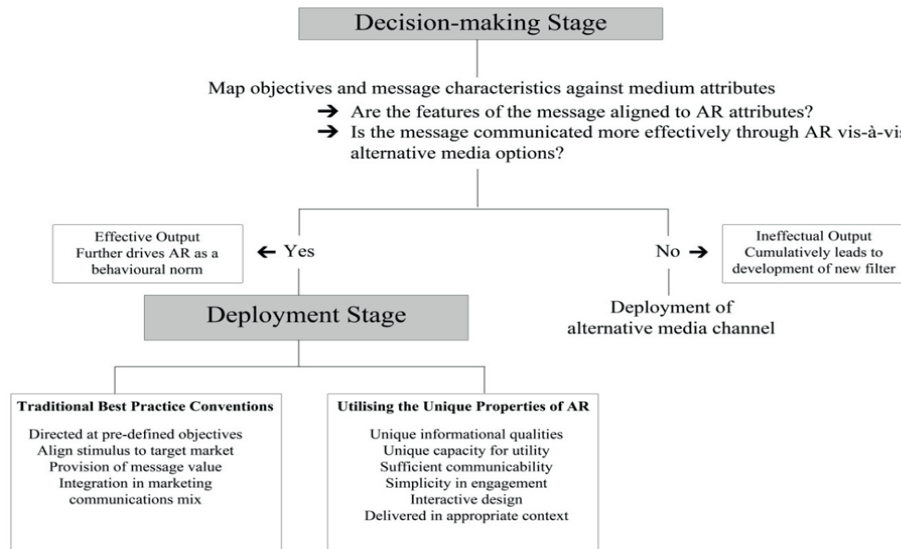


Fig. 1. A Model for the Approach to Augmented Reality Deployment in Marketing Communications

As the model depicts, the act of deployment itself comprises one of two major dimensions of the model. A core tenet of the model is that effective AR implementation begins as early as the decision of whether or not to utilise the medium for a given communications endeavor. The primary consideration for the prospective brand adopter concerns its communication objectives and the extent to which they align to the attributes of AR. Given the plethora of diverse media channels which characterize the contemporary marketing communications environment, practitioners possess a wide array of options to direct at a potentially wide spectrum of objectives. The capacity of any medium, AR included, to achieve a corresponding objective is variable. The implication for the prospective brand adopter is the need to compose meaningful objectives and map those objectives against the attributes of AR in order to make an accurate projection of how effective or ineffective the resulting output is likely to be.



The model further depicts opposing outcomes based on the extent to which the objectives of the communication and the characteristics of the message are closely aligned to the attributes of AR. Where there are ill-defined or a complete absence of objectives from the beginning of a prospective communications piece, or where there are no demonstrable advantages of the medium over alternative channels, AR is likely to be limited in its ultimate effectiveness. This finding is represented on the right-hand side of the model, leading to the suggestion that an alternative medium is deployed in the particular campaign for which AR has been considered. As alluded to in the model, the outcome presents further implications beyond the scope of an individual brand adopter; for a currently peripheral phenomenon such as AR, cumulative instances of 'poor' practice are potentially damaging for the wider industry, thus inhibit the growth of a flourishing ecosystem. Consumers are likely to become jaded towards the phenomenon if its implementation is perpetually ill-conceived; this precipitates the development of cognitive filters or barriers which inhibit AR stimuli, regardless of their technical merits. The left-hand side of the model depicts an opposing outcome, where the communication objectives are appropriately aligned to AR and the medium is demonstrably more effective than alternative channels for dissemination in respect of the message characteristics. Used to its full potential, AR was found to be a highly engaging medium, with inimitable levels of output resonance. The wider implications of consistently effective deployment are further contrasting to the above; if consumers see value in an engagement, it heightens society's cognizance of the phenomenon, encouraging its habitual use thus accelerating its diffusion.

If the prospective brand adopter has made the decision to implement AR in a communications campaign subsequent to the considerations examined under the decision-making stage, the focus turns to the execution of the stimulus. A predominant finding of the research is the need to conceive the deployment of AR on two dimensions, which are thus reflected in the proposed model. On one dimension, adherence to established best practice conventions is highlighted. Established conventions of the marketing communications discipline are important determinants of message effectiveness irrespective of medium, and AR does not form an exception in this regard, despite the singular nature of the phenomenon. On another dimension, the singularity of its nature is acknowledged in respect of deployment. A number of considerations tied to the properties of the phenomenon must be made; these are not necessarily unique to AR deployment, but they are factors worthy of particular attention. The model depicts the factors associated with each dimension of deployment, examined in the previous section of the paper. Ultimately, a given piece of communication must reflect both dimensions; achieving balance between adherence to traditional best practices and affording due regard to the distinctive properties of augmented reality.

## 6. Acknowledgements

The author wishes to thank Ms. Rose Leahy (Cork Institute of Technology) and Professor Dr. Ralf Schellhase (Hochschule Darmstadt) for their supervision of the research upon which the paper is based. The author also thanks the interview and focus group participants, without whom the research would not have been possible.

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